

REMARKS

Applicants thank the Examiner for conducting a brief interview clarifying the purposes of the non-responsive communications issued on October 24, 2007, and February 7, 2008. The Examiner proposed a solution. No agreement was reached.

This response completely replaces the responses submitted to the Office on July 11, 2007, November 7, 2007, and February 8, 2008. Furthermore, this response includes the reasoning as to why incorporating the subject matter of claim 2 into claim 1 makes claim 1 patentable. Claims 1, 3, 4, and 6-19 are pending. Claim 2 is cancelled, and its subject matter now is incorporated in claim 1. Similarly, claim 4 is amended to incorporate claim 5, which is canceled. No new matter is presented.

Claims 1, 3, 7, 9, 11, 13, 15, 17, and 19 stand rejected under 35 USC 103(a) as unpatentable over Hirukawa, U.S. Patent Application Publication No. 2003/0048825 A1, in view of any of the following: Matsubara, Japanese Patent No. 03-064980 (called "HAPA-1" by the Examiner); Tatsumi, Japanese Laid-Open Patent Application No. 11-274644 (called "AAPA-1" by the Examiner); and Matsumoto, Japanese Laid-Open Patent Application No. 11-112087. This rejection is respectfully traversed.

Claim 1, as amended, recites a semiconductor laser device, comprising, *inter alia*, an n-side barrier layer that is present on a side of a lower guide layer, a p-side barrier layer that is present on a side of an upper guide layer, where the p-side barrier layer is thinner than the n-side barrier layer, and where the n-side barrier layer has a width of 70 Å or more.

In contrast, neither Hirukawa, the secondary references cited by the Examiner, the secondary references that variously modify Hirukawa, nor any combination thereof discloses all the limitations of independent claim 1. Applicants will demonstrate their reasoning below.

The Office Action states that the layers of Hirukawa are the same as applicants' claimed n-side and p-side layers. Applicants respectfully submit that Hirukawa's n-side and p-side layers are different from applicants' claimed n-side and p-side layers.

For example, Hirukawa neither discloses nor suggests an n-side layer being thicker than a p-side layer or an n-side layer having a width of 70 Å or more. Rather, Hirukawa discloses its two barrier layers being the same width and being 100 Å. Thus, by incorporating claim 2 in claim 1, applicants have defined more specifically the point that an equal width is not the same as an unequal width.

Applicants' claims recite a width having a demonstrable "optimal effect" (see specification, page 18, lines 9-10). Thus applicants' claims recite the 70 Å width here for an objective and defined reason; that is, to achieve better results with the configuration of their claimed semiconductor device (see *Id.*). The incorporation of the subject matter of claim 2 in claim 1 reinforces and clarifies the meaning of the term "optimal effect," as defined in the specification at page 18, lines 9-10.

Moreover, applicants respectfully submit that one of ordinary skill in the art, relying on Hirukawa, would not have had a reason to create the invention as claimed, such that an n-side layer is thicker than a p-side layer and the n-side layer has a width of 70 Å or more. Accordingly, no person of ordinary skill in the art would have had a reason to consider Hirukawa at the time the invention was made.

Fukunaga, U.S. Patent No. 6,127,691, and Nishiguchi, U.S. Patent No. 6,154,476, fail to cure the deficiencies that applicants submit are found in Hirukawa.

Amended claim 1 now includes the limitations of claim 2. Claim 2 was rejected over Hirukawa, various secondary references, and further in view of Tada, U.S. Patent No. 5,636,236. Applicants respectfully traverse the rejection of claim 2.

Tada is directed to a semiconductor having an MQW (multi-quantum well) active layer that is supposedly improved by varying an energy gap in a barrier layer. (See Tada, col. 1, lines 37-40.) Tada discloses uniformly distributing holes over the MQW active layer. (See Tada, col. 4, lines 1-2.) According to Tada, "controlling a rate of overflow of holes in the MQW structure" can be achieved by "changing a strain and a width of a quantum well." (See Tada, col. 4, lines

20-22.) Tada further discloses that hole distribution can be equalized by “intentionally making a thickness of a barrier layer close to a quantum well layer ... be thin and positively using the tunneling effect.” (See Tada, col. 4, lines 24-26.) Tada does not disclose or suggest that an n-side layer is thicker than a p-side layer or that an n-side layer has a width of 70 Å or more.

Tada merely would have disclosed to a person of ordinary skill in the art to make one layer as thin as possible and to locate that layer close to a quantum well layer. (See Tada, col. 4, lines 20-22 and 24-26.) “Thicknesses of barrier layers near wells containing a large number of holes are made to be thin to obtain a uniform carrier distribution.” (See Tada, col. 6, lines 43-45.) Tada discloses nothing about the relationship between thicknesses of various layers. A configuration in which a single layer is made as thin as possible and is located close to a quantum well layer is not the same as or obviously similar to the claimed configuration, such that the “p-side barrier layer has a smaller thickness than a thickness of the n-side barrier layer” and the “n-side barrier layer has a thickness of 70 Å or more” as recited in claim 1. Therefore, Tada would not have been relevant to a person of ordinary skill in the art to make the claimed invention.

Assertions that Tada achieves uniform hole and electron carrier distribution would have provided no reason to a person of ordinary skill in the art to create the claimed invention. Further, the Examiner has not pointed out a reason why a person of ordinary skill in the art would have *created the claimed invention having the claimed arrangement* by relying upon a combination of Hirukawa and Tada. Moreover, even if Tada would have been considered by a person of ordinary skill in the art, that person would not have created the invention as recited in amended claim 1 because neither Hirukawa nor Tada discloses a configuration in which the width of the “n-side layer is 70 Å or more” and the “p-side barrier layer has a smaller thickness than a thickness of the n-side barrier layer.” Since the Examiner has failed to show that any combination of Hirukawa and Tada would have led a person of ordinary skill in the art to create

the claimed invention as recited in amended claim 1, the rejection must not stand and should be withdrawn. Accordingly, claim 1 is allowable.

Claims 3, 7, 9, 11, 13, 15, 17, and 19 are allowable at least due to their respective dependencies from claim 1.

Claims 4, 6, 8, 10, 12, 14, 16, and 18 stand rejected under 35 USC 103(a) as unpatentable over Hirukawa as variously modified in view of secondary references.

Since claim 1 recites substantially similar subject matter as independent claim 4, applicants respectfully submit that all of the arguments above that are directed to amended claim 1 also apply to amended claim 4. Fukunaga, U.S. Patent No. 6,127,691, and Nishiguchi, U.S. Patent No. 6,154,476, fail to cure the deficiencies of Hirukawa.

In addition, claim 5, which has been incorporated in claim 4, was rejected over Hirukawa, various secondary references, and further in view of Tada, U.S. Patent No. 5,636,236. Applicants respectfully disagree.

As stated above, Tada merely would have disclosed to a person of ordinary skill in the art to make a single layer as thin as possible and to locate that layer close to a quantum well layer. (See Tada, col. 4, lines 20-22 and 24-26.) A configuration in which a single layer is made as thin as possible and is located close to a quantum well layer is not the same as or obviously similar to the claimed n-side layer having a thickness of 70 Å or more and thicker than the thickness of the claimed p-side layer.

Since claim 1 recites substantially similar subject matter as independent claim 4, applicants respectfully submit that all of the arguments above that are directed to amended claim 1 apply to amended claim 4. Therefore, applicants respectfully request that the rejection of claim 4 under 35 USC 103(b) be withdrawn. Accordingly, claim 4 is allowable.

Claims 6, 8, 10, 12, 14, 16, and 18 are allowable at least due to their respective dependencies from claim 4.

Early action soliciting allowance of the pending claims is requested.

In the event that the transmittal letter is separated from this document and the Patent and Trademark Office determines that an extension and/or other relief is required, applicants petition for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing Docket No. **204552032000**.

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Respectfully submitted,

By

Adam C. Lilling

Registration No. 60,272

Morrison & Foerster LLP

1650 Tysons Blvd, Suite 400

McLean, Virginia 22102

Telephone: (703) 760-7334

Facsimile: (703) 760-7777